

Notice of Allowability**Application No.**

10/591,938

Applicant(s)

SASAKI, MAKOTO

Examiner

FRANCIS M. LEGASSE JR

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 15 May 2008.
2. ☒ The allowed claim(s) is/are 1,3,6 and 7.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 20080826.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other ____.

/Thanh X Luu/
Primary Examiner, Art Unit 2878

EXAMINER'S AMENDMENT AND STATEMENT OF REASONS FOR ALLOWANCE

Status of Claims

Claims 2 and 4 are cancelled.

Claims 5-7 are entered as new.

Claims 1, 3 and 5-7 are pending.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Attorney Joe Wilson on 26 August 2008.

The application has been amended as follows:

Amend Claim 1 to the following:

Claim 1 A photoelectric imaging sensor comprising:

a photo cathode converting an incident light into photoelectrons;

a photomultiplier, kept vacuum inside thereof, intensifying photoelectrons converted by said photo cathode;

a two-dimensional output electrode array arranged in a plane comprising plate electrodes at which photoelectrons intensified by said photomultiplier arrive; and

connecting means for electrically connecting said output electrode array to pick-up electrodes arranged outside said photomultiplier[.],

wherein said output electrode array comprises:

a plurality of plate electrodes in an array arrangement at a first side of the output electrode array;

another plurality of plate electrodes in an array arrangement at a second side of the output electrode array, each of the plate electrodes corresponding to one of the plate electrodes at the first side of the output electrode array; and

support electrodes electrically connecting each of the corresponding plate electrodes at the first side and at the second side.

Cancel Claim 5

Amend Claim 6 to the following:

Claim 6 The photoelectric imaging sensor according to Claim [[5]]1, wherein said connecting means are anisotropic conductive rubber or metal bulbs.

Amend Claim 7 to the following:

Claim 7 An output electrode array for a photoelectric imaging sensor using a photomultiplier, comprising:

a plurality of plate electrodes in an array arrangement at a first side of the output electrode array;

another plurality of plate electrodes in an array arrangement at a second side of the output electrode array, each of the plate electrodes corresponding to one of the plate electrodes at the first side of the output electrode array; and

support electrodes electrically connecting each of the corresponding plate electrodes at the first side and at the second side;

a photocathode converting an incident light into photoelectrons, and
a photomultiplier, kept vacuum inside thereof, intensifying photoelectrons
converted by said photo cathode,

wherein the first side of the output electrode array is facing inside of the photomultiplier and the second side of the output electrode array is facing outside of the photomultiplier.

References Cited

Kato et al. (US 2004/0069932 A1) discloses a photomultiplier comprising a photocathode and an output electrode array (21) but fails to teach a plurality of plate electrodes on the first side out the output electrode array and a second set of a plurality of plate electrodes at a second side of the output electrode array.

Kuwabara (US 2003/0010942 A1) teaches an image detector comprising a first array of multiple flat electrodes (12a) and a second set of multiple flat plate elements (16a) but fails to teach that there is a photocathode converting incident light into photoelectrons and a photomultiplier, kept vacuum inside thereof, intensifying photoelectrons converted by said photo cathode. Further, there is no motivation to combine the invention of Kato et al. with that of Kuwabara because it would potentially destroy the functionality of the photomultiplier of Kato et al.

Allowable Subject Matter

Claims 1, 3, 6 and 7 are allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

Regarding claim 1, the prior art of record fails to teach alone or in combination, a photoelectric imaging sensor comprising, along with the other claimed features, an output electrode array comprising a plurality of plate electrodes in an array arrangement at a first side of the output electrode array; another plurality of plate electrodes in an array arrangement at a second side of the output electrode array, each of the plate electrodes corresponding to one of the plate electrodes at the first side of the output electrode array; and support electrodes electrically connecting each of the corresponding plate electrodes at the first side and at the second side.

Regarding claim 7, the prior art of record fails to teach alone or in combination, an output electrode array for a photoelectric imaging sensor using a photomultiplier, comprising a plurality of plate electrodes in an array arrangement at a first side of the output electrode array; another plurality of plate electrodes in an array arrangement at a second side of the output electrode array, each of the plate electrodes corresponding to one of the plate electrodes at the first side of the output electrode array; support electrodes electrically connecting each of the corresponding plate electrodes at the first side and at the second side; and wherein the first side of the output electrode array is facing inside of the photomultiplier and the second side of the output electrode array is facing outside of the photomultiplier.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Francis M. LeGasse Jr whose telephone number is (571) 272-9798. The examiner can normally be reached on Monday through Thursday 7:00 am to 5:30 pm E.S.T.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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